

Appendix B

Appendix B shows a comparison of the amino acid sequences of the LKR domains of the bifunctional LKR/SDH proteins from Arabidopsis, corn and soybean, SEQ ID NOs: 112, 122 and 121, respectively, and the yeast monofunctional lysine-forming SDHs (gi: 453184, 1170847, and 173262). Amino acids conserved among at least one plant sequence and at least one yeast sequence are indicated with an asterisk (*) on the top row; amino acids conserved among at least two plant sequences are indicated by a plus (+) above the alignment; dashes are used by the program to maximize the alignment of the sequences.

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*               *   *           * *   * * *   * *   *   * *   *
                                     +++++ ++       ++ +++++
LKR domain of SEQ ID NO:112  MNSNGHEEEKKLGNGVVGILSETVKNWERRTPLTPSHCARLLHGG-KDRTGISRIVVQPS
LKR domain of SEQ ID NO:122  -----CARLLGGGKNGPRVNRIIVQPS
LKR domain of SEQ ID NO:121  -----
GI: 453184                   MA-----AVTLHLRAETKPLEARAALTPTTVKKLIAK-----FKIYVEDS
GI: 1170847                  MSKS-----PVILHLRAETKPLEARAALTPTTKQLLDAG-----FEIYVEES
GI: 173262                   MT-A-----PVKLHLRAETKPLEHRSALTPTTTRKLLDAG-----FEVFVEKS

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LKR domain of SEQ ID NO:112  AKRIHHDALYEHVGCESDD-----LSDCGLILGIKQ-PELEMILPERAYAFFSHTHKAQ
LKR domain of SEQ ID NO:122  TRRIHHDQYEDAGCEISED-----LSECGLIIGIKQ-PKLQMILSDRAYAFFSHTHKAQ
LKR domain of SEQ ID NO:121  -----
GI: 453184                   PQSTFNINEYRQAGAIIVPAGSWKTAPRDRIIIGLKEMPETDTFPLVHEHIQFAHCYKDQ
GI: 1170847                  SQSTFDIKEYEAVGAKIVPEGSWKTAPKERIIFGLKELPENETFPLIHEHIQFAHCYKDQ
GI: 173262                   PLRIFDDQEFVDVGATLVEEGSWVSAPEDRMIIGLKELPE-ESFPLSHEHIQFAHCYKDQ

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               ++++++ +++++ + +++++ +++++ +++++ +++++ ++++++
LKR domain of SEQ ID NO:112  KENMPLLDKILSERVTLCDYELIVGDHGRLLAFGKYAGRAGLVDFLHGLGQRYLSLGYS
LKR domain of SEQ ID NO:122  KENMPLLDKILEERVSLFDYELIVGDDGKRSLAFGKFAGRAGLIDFLHGLGQRYLSLGYS
LKR domain of SEQ ID NO:121  -----
GI: 453184                   AGWQNVLMRFIKGHGTLYDLEFLENDQGRRVAAGFGFYAG-----FA
GI: 1170847                  AGWQDVLKRFPQNGILYDLEFLENDQGRRVAAGFGFYAG-----FA

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LKR domain of SEQ ID NO:112
LKR domain of SEQ ID NO:122
LKR domain of SEQ ID NO:121
GI: 453184
GI: 1170847
GI: 173262

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 TPFLSLGASYMYSSLAACAAVISVGEEIASQGLPLGICPLVFVFTGTGNVSLGAQEIFK
 TPFLSLGQSHMYPSLAACAAVIVVAEEIATFGLPSGICPIVFVFTGVGNVSGAQEIFK

 GAALGV-RDWAFFKQ-----THSDD---EDLP-AVSP----YPNEKAL---VKDVTK
 GAAIGV-LDWSFKQLNGNTKGTKGEGEG---GELP-GVTP----YPNENEL---IKDVKI
 GAAIGV-ETWAFOO-----THPDS---ENLP-GVSA----YPNETEL---VDKIKK

LKR domain of SEQ ID NO:112
LKR domain of SEQ ID NO:122
LKR domain of SEQ ID NO:121
GI: 453184
GI: 1170847
GI: 173262

[illegible]

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+++++++ ++++++ ++++++ ++ ++++++
DIGGSIEFVNRTLIDSPFFRFPNSNNSYYDDMDGDGVLCAVDILPTEFAKEASQHFGD
DIGGSIEFINKSTSIERPFFRYDPSKNSYHDDMEGAGVCLAVDILPTEFSKEASQHFGN
DIGGSIEFVNRGTSIDSPFFRYDPLTNSYHDDMEGNGVICLAVDILPTEFAKEASQHFGN
NPHNPIPIYTVATV-----FNKPTVLVPTTVGPKLSVI-SIDHLPSSLPREASEFFSH
NPHNPIPVYEIATV-----FNEPTVEVKLDKGPKLSVC-SIDHLPSSLPREASEFFAK
NPHNPVPVYTIATT-----FDHPTVPVETTAGPKLSVC-SIDHLPSSLPREASEAFSE

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LKR domain of SEQ ID NO:112	ILSGFVGSIASMTEISDLPAHLKRACISYRGELTSLYE-YIPMRKSNPE
LKR domain of SEQ ID NO:122	ILSRLVASLASVKQPAELPSYLRRACIAHAGRLTPLYE-YIPMRNTMID
LKR domain of SEQ ID NO:121	ILSQFVVNLASATDITKPAHLRRACIAHKGVLTSLYD-YIPMRSSDS-
GI: 453184	DL---LPSLELLPQRKTAPVWVRA-----KKLFDRHCARVKRSSRL
GI: 1170847	DL---MPSLLELPNRDTSPVWVRA-----KQLFDKHVARLDKE---
GI: 173262	AL---LPSLLQLPQRDTAPVWTRA-----KALFDKHVLRIGE----